UNITHOX Ethoxylates

Specialty polymers and waxes to meet your needs

Chemical nature and physical properties

UNITHOX™ ethoxylates are nonionic emulsifiers and wetting agents with high molecular weights and melt points. These Baker Petrolite ethoxylated products are produced from UNILIN™ alcohols which are fully saturated, long chain, linear, C_{20} to C_{50}, synthetic alcohols. The relative effects of the hydrophilic and lipophilic portions of UNITHOX ethoxylates vary according to the types and relative amounts used of starting alcohol and ethylene oxide. Thus, UNITHOX ethoxylates can be tailored to provide unique surface-active properties that are useful in a wide range of applications. They can also be readily blended with other surfactants to deliver a truly customized solution.

Typical properties

Product	Molecular Weight	Ethylene Oxide (% by weight)	HLB Value	Hydroxyl Number (mg KOH/g sample)	Melting Point (˚C)
Test Method	Calculation	NMR Calculation	Calculation	ASTM E-222	ASTM D-127
UNITHOX™ 420 ethoxylate	575	20	4	85	91
UNITHOX™ 450 ethoxylate	920	50	10	55	91
UNITHOX™ 480 ethoxylate	2300	80	16	22	86
UNITHOX™ 490 ethoxylate	4600	90	18	12	71
UNITHOX™ 550 ethoxylate	1100	50	10	41	99
UNITHOX™ 720 ethoxylate	875	20	4	52	106
UNITHOX™ 750 ethoxylate	1400	50	10	33	106

Product benefits

The hydrophobic and hydrophilic components of UNITHOX ethoxylates provide functionality to secure many advantages for end users of these products:

Features

Long hydrophobic chain

UNITHOX ethoxylates can be dispersed in both water and a wide range of organic media. They are also excellent dispersion aids. They can disperse a wide range of media in both aqueous and organic systems:

PIGMENTS:	Phthalo blue, lithol rubine, zinc oxide, carbon black, iron oxide, titanium dioxide
WAXES:	Paraffin, microcrystalline, synthetic (POLYWAX™ polyethylenes)
OILS:	Silicone, soybean
RESINS:	Epoxy, polyester, rosin ester, terpene phenolic acid, alkyd

UNITHOX ethoxylates provide excellent emulsification properties. The presence of the long hydrophobic chain affords them the ability to emulsify high molecular weight synthetic or natural oil phases in aqueous systems.

Falex tests on several UNITHOX ethoxylates indicate they provide excellent anti-wear (ASTM D-2670) and extreme pressure lubricating (ASTM D-3233) properties in water-based lubricant formulations. This, along with their ability to disperse a wide range of components into aqueous systems, makes them excellent building blocks for metalworking and other lubricant formulations.

Applications

There is a wide range of possible applications for UNITHOX ethoxylates. Many of these are based on the product's ability to act as a dispersant or an emulsifier.

- Dispersion aids in water based coating and ink applications
- Lubricants and emulsifiers in metal-working fluids
- "Solid surfactants" for modification of various polymer systems
- Emulsification of silicon oils
- Emulsifiers and lubricants for textile processing and finishing fluids

Dispersions of UNITHOX ethoxylates

It is often more convenient to apply UNITHOX ethoxylates to industrial systems as water-based dispersions.

Product	Starting Ethoxylate	Viscosity @ 25˚C (cP)	Solids (%)
UNITHOX™ D-300 ethoxylate	UNITHOX™ 750 ethoxylate	1500	23.5*
PETROLITE™ D-1038 dispersant	UNITHOX™ 490 ethoxylate	150	10*

** The UNITHOX D-300 ethoxylate and PETROLITE D-1038 dispersant are based on water and are VOC free.*

Standard product form and packaging:
Solid Form: Pastilles
Packaging:
All products except UNITHOX 450 ethoxylate: 25 KG bags/40 bags per pallet
UNITHOX 450 ethoxylate: 25 KG small fiber drum/16 drums per pallet

Dispersions:
Packaging: 40 pound pails; 450 pound drums; 2200 pound totes

FDA status:
Please refer to Baker Hughes polymers FDA product guide

For more specific information, please contact your Baker Hughes representative.

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